

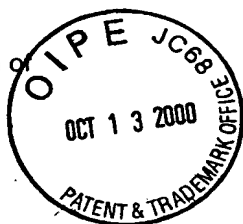
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

In re Patent Application of

JAMES

Serial No. 09/029,581

Filed: 06 March 1998



Atty. Dkt. 36-1116

C#/M#

Group Art Unit: 2771

Examiner: J. Mills

Date: October 13, 2000

Title: DATABASE ACCESS

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

☐ **NOTICE OF APPEAL**

Applicant hereby appeals to the Board of Appeals from the decision dated _____ of the Examiner twice/finally
rejecting claims _____ (\$ 310.00)

\$ 0.00

☒ An appeal **BRIEF** is attached in triplicate in the pending appeal of the
above-identified application (\$ 310.00)

\$ 310.00

☐ An **ORAL HEARING** is requested under Rule 194 (\$ 270.00)
(due within two months after Examiner's Answer)

\$ 0.00

☐ Credit for fees paid in prior appeal without decision on merits

-\$ (0.00)

☐ A reply brief is attached in triplicate under Rule 193(b)

(no fee)

☒ Petition is hereby made to extend the current due date so as to cover the filing date of this
paper and attachment(s) (\$110.00/1 month; \$390.00/2 months; \$890.00/3 months; \$1390.00/4 months)

\$ 110.00

SUBTOTAL \$ 420.00

☐ Applicant is a "small entity"; enter 1/2 of subtotal and subtract

-\$ (0.00)

☐ "small entity" statement attached

SUBTOTAL \$ 420.00

Less month extension previously paid on

-\$ (0.00)

TOTAL FEE ENCLOSED \$ 420.00

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension.
The Commissioner is hereby authorized to charge any deficiency in the fee(s) filed, or asserted to be filed, or which
should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our **Account No.**
14-1140. A duplicate copy of this sheet is attached.

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By Atty.: Larry S. Nixon, Reg. No. 25,640

Signature: Larry S. Nixon

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02 FC:115

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

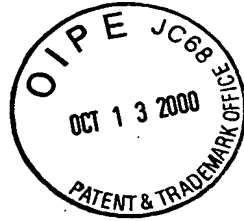
In re Patent Application of

JAMES

Serial No.: 09/029,581

Filed: March 6, 1998

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Atty. Ref.: 36-1116

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Examiner: Mills, J.

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APPEAL BRIEF

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

Appellant hereby appeals the Final Rejection of March 15, 2000, Paper No. 9.

A letter to the Chief Draftsperson with proposed drawing amendments is attached hereto.

REAL PARTY IN INTEREST

The real party in interest is the assignee, British Telecommunications plc, a corporation of the country of Great Britain.

RELATED APPEALS AND INTERFERENCES

The Appellant, the undersigned, and the assignee are not aware of any related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

STATUS OF THE CLAIMS

Claims 1-8 remain pending in this application. Claims 1-8 stand rejected by the Examiner, the rejections of which are appealed. No claims have been substantively allowed.

STATUS OF ANY AMENDMENT FILED SUBSEQUENT TO FINAL REJECTION

A response after final rejection under Rule 116 was filed on July 14, 2000. By that response, arguments were presented traversing the Examiner's rejection under 35 U.S.C. §102. The July 14 response did not include any amendments to the specification or claims.

While no Office Action has been issued by the Examiner subsequent to the July 14 response, Appellant presumes that the Examiner has considered the response. If this presumption is inaccurate, Appellant respectfully requests notification thereof.

The claims as presented in the appendix to this brief are as amended by the March 6, 1998 Preliminary Amendment.

CONCISE EXPLANATION OF THE INVENTION

The present invention relates to a client/server computer environment in which data consistency between data held in a master database and data held in a cache database is checked. In particular, the data consistency is checked by comparing a key associated with a respective cache database entry and a key associated with an index to a corresponding data entry in the master database. An

JAMES--Application No. 09/029,581

exemplary embodiment of the present invention is shown in Figs. 1, 3c and 6. The structure shown in Figs. 3a and 3b and processes shown in Figs. 4 and 5 illustrate acknowledged prior art systems which can be read in contrast to Figs. 3c and 6 to understand the exemplary embodiment of the present invention.

The computer environment in accordance with an exemplary embodiment of the present invention includes, inter alia, a file server 100 which runs network and database management system (DBMS) software suitable for providing remote database access to a plurality of clients 130 over a network 140. The file server 100 includes a main memory 104 which is split into areas for standard program and data storage. The main memory 104 includes a large area of memory known as a system global area (SGA) 105 which can be used by the database software to speed up access to a master database 126 for the clients 130. (See Fig. 1 and page 7, lines 30-36).

The clients 130 are standard computer systems which run software suitable for reading and writing data stored in a database. The clients 130 each include a standard disk drive 135 having a storage area for a cache database 136 into which data from the master database 126 can be copied and accessed. (See Fig. 1 and page 8, lines 1-8).

The master database 126 is operatively coupled to the file server 100 and includes a data table 204 for storing a group of related data. The data table 204 is split into a plurality of pages 215 each comprising rows of data 210. The master database 126 also includes an index 206 comprising index pages 220. The index pages 220 contain index entries 225 for each row 210 in the data table 204. Each

JAMES--Application No. 09/029,581

index entry 225 typically comprises index fields, one of which references a specific row of the data pages 215. (See Fig. 2 and page 8, lines 9-27).

The cache database 136 comprises a storage area 230 for holding cached data. The cached data typically comprises data rows 235 which are copied from the master database 126. The cache database 136 may or may not have a corresponding index depending on its size and acceptable access speed. (See Fig. 2 and page 9, lines 14-22).

Fig. 5 describing the prior art and Fig. 6 describing the present invention illustrate database read procedures for systems operating without and with a key in the index entries, respectively. In the procedure illustrated by prior art Fig. 5, a client 130 transmits a query across the network 140 to the file server 100 to read data from the file server 100 (step 500). The query includes an identifier for the data row requested and a respective key. The file server 100 ultimately compares the key of a cached data row 235 with the key of a master data row 210 which has been requested (step 525). If the keys are the same, the file server 100 sends a reply to the client 130 that the cached data is still valid (step 540). If, however, the keys are different, the file server 100 transmits the entire data row 210 (or only the requested columns of the data row 210) to the client 130 to update the cache database 136 (step 535). The client 130 receives the response and acts accordingly (step 545). (See page 11, line 19 to page 12, line 4).

In the procedure of Fig. 6 illustrating the present invention, steps 600 to 620 are equivalent to steps 500 to 520 of prior art Fig. 5. However, in step 625, the file server 100 compares the key in the index entry of the requested data row 210 with

JAMES--Application No. 09/029,581

the key of the cached data row 235 as received in the query. Thus, the key of an index entry is read and used in the comparison in step 625 of the present invention rather than the key of a row from the master database 126 as in prior art Fig. 5. If the keys are the same, the file server 100 transmits a message to the client 130 that the cached data is still valid (step 640). If, however, the keys are different, the file server 100 accesses the master database 126 to retrieve the current data row (step 630). The current data row is then returned to the client 130 to update the cache database 136 (step 635). (See page 12, lines 5-15).

The advantage of reading the key of an index entry and using it in the comparison in step 625 of the present invention (rather than the key of a row from the master database 126 as illustrated in step 525 of prior art Fig. 5) is that it avoids the need to read the whole row from the master database 126 and thus reduces the processing load on the file server 100. (See page 12, line 19 to page 13, line 6.)

Although the specification of the present application describes the use of time stamps as an example of the "keys" discussed above, other methods for marking data rows to enable data consistency comparisons are possible such as an incremental counter field or unique codes representative of the specific state of a row. (See page 13, lines 24-34.)

CONCISE EXPLANATION OF THE ISSUE PRESENTED FOR REVIEW

Whether claims 1-8 are patentable under 35 U.S.C. §102(e) as not having been anticipated by Brunner et al. (U.S. Patent 5,550,971).

WHETHER THE CLAIMS STAND OR FALL TOGETHER

Claims 1 and 4 stand or fall together and do not stand or fall with any other claims.

Claims 2 and 8 stand or fall together and do not stand or fall with any other claims.

Claim 3 stands or falls alone and does not stand or fall with any other claims.

Claim 5 stands or falls alone and does not stand or fall with any other claims.

Claim 6 stands or falls alone and does not stand or fall with any other claims.

Claim 7 stands or falls alone and does not stand or fall with any other claims.

ARGUMENTS WITH RESPECT TO THE ISSUES PRESENTED FOR REVIEW

Claims 1-8 are patentable under 35 U.S.C. §102(e) as not having been anticipated by Brunner et al. (U.S. Patent 5,550,971).

For a reference to anticipate claim, each element must be found, either expressly or under principles of inherency, in the reference.

Appellant respectfully submits that Brunner et al. fails to disclose (or even suggest) each element of the claimed invention. For example, Brunner et al. fails to disclose the following limitation of independent claim 1:

“comparing a first key stored in association with the item of data in the cache database with a **second key stored in association with an index entry** for the respective item of data in the master database (emphasis added).”

Similarly, Brunner et al. fails to disclose the following limitations of independent claim 2:

“reading a first key stored in association with a cached copy of a required item of data from the cache database;
reading a **second key stored in association with an index entry** for a respective item of master data from the master database;
comparing the first key with the second key...(emphasis added).”

Claims 1 and 2 each requires comparing a first key stored in association with an item of data in a cache database with a second key stored in association with an index entry for a respective item of data in a master database. In contrast, Brunner et al. is merely directed towards a technique for automatically generating a graphical user interface (GUI) for database inquiries without the need to recode or recompile the software that generates the GUI. Specifically, Brunner et al. discloses a system having a remote database 12 and a local cache database 26.

Brunner et al. fails to disclose, however, an index entry for a data item in a master database, particularly since it would be immaterial to the GUI generation algorithm that is at the heart of its teachings. Even assuming arguendo that Brunner et al. discloses an index entry (and Appellant submits that it doesn't), Brunner et al. fails to further disclose a second key stored in association with the index entry for the data item in the master database. There is also no teaching in Brunner et al. of comparing a first key stored in association with a respective data item in the cache database with the second key stored in association with the index entry, particularly since Brunner et al. fails to even suggest any comparison between something in association with an index entry with something in the cache database.

With respect to the above limitations of claims 1 and 2, the Final Office Action alleges the following:

“However, this checking [between the cache database and the master database by comparing keys] is shown by the reference in the summary of the invention as essentially the same function as follows see col. 2 line 34 et seq.

The user interface should be flexible so that if a change is made t5o (sic) the underlying database schema or model, the interface will adapt dynamically to reflect the change without the need to recode and recompile the software that generates the user interface.”

Appellant respectfully disagrees with the allegation that “checking items between the cache database and the master database by comparing keys” is somehow disclosed by Brunner et al. in the above noted teaching “The user interface should be flexible...” (i.e., the teaching provided at col. 2 lines 34 et seq). This teaching of Brunner et al. deals solely with GUI generation and fails to support the allegation that Brunner et al. discloses the “checking.” Specifically, this teaching is concerned only with the automatic generation of the GUI in the event that the organizational structure of the access database is changed irrespective of whether the data content within a given database structure has been changed or not.

The above teaching of Brunner et al. has nothing to do with comparing a first key stored in association with an item of data in a cache database with a second key stored in association with an index entry for the respective item of data in a master database. As noted above, Appellant submits that there is no indication that a database of Brunner et al. even includes an index entry, let alone a key associated with the index entry. If the rejection over Brunner et al. is maintained, Appellant respectfully requests that the next Office Action clarify how the teachings of col. 2, line 34 et seq. of Brunner et al. (or any other portions thereof) disclose the above required features of claims 1 and 2 so that Appellant can make a suitable response thereto in a reply brief.

The Final Office Action further alleges the following:

"The notion of consistency between the databases is brought out in this passage and the need to insure consistency part of the user interface. The comparing feature that is specifically argued by the applicant is an essential feature of the cited reference."

Appellant respectfully disagrees with the allegation of the Office Action that "The comparing feature...is an essential feature of the cited reference." As discussed above, Brunner et al. fails to disclose: (1) an index entry for an item of data in the master database; (2) a key associated with the index entry; or (3) comparing a first key associated with a data item in a cache database with a second key associated with the index entry for the respective item of data in the master database.

If the term "essential feature" of the allegation "The comparing feature...is an **essential feature** of the cited reference (emphasis added)" is meant to imply that the comparing feature is inherent in view of the teachings of Brunner et al., Appellant again respectfully disagrees. The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9F. 3d 1531, 1534, 28 USPQ 2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art). In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex parte Levy*, 17 USPQ 2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). See MPEP §2112. There is nothing in Brunner et al. that would even suggest that "the

comparing feature" necessarily flows from the teachings of Brunner et al. First, Brunner et al. fails to disclose an index entry for a data item in the master database, let alone a key associated with the index entry. Second, Brunner et al. fails to disclose anything specific relating to the checking of consistency between the local cache and the corresponding data entries in the master database, which forms the reason that a first key and a second key associated with the index entry are compared. Third, since there are several techniques for maintaining consistency between a local cache database and a master database (see, e.g., the conventional techniques disclosed by prior art Figs. 4 and 5 of the present application) which do not involve a key associated with an index entry for a data item in the master database, any allegation that the specific comparison required by claims 1 and 2 would necessarily flow from the teachings of Brunner et al. is unfounded, particularly since Brunner et al. fails to provide any detail on checking data consistency.

Independent claim 1 further requires "A method for checking the consistency of an item of data in a cache database with a respective item of data in a master database..." As discussed above, Brunner et al. is directed towards a technique for automatically generating a GUI for database inquiries and is in no way concerned with checking the consistency of an item of data in a cache database with a respective item of data in a master database.

Independent claim 2 further requires a method for retrieving data from a local cache or master database including the step of retrieving in the event the first and second keys are the same the cached copy of the data item or in the event the first

JAMES--Application No. 09/029,581

and second keys are different the respective item of master data. There is no such disclosure anywhere in Brunner et al.

Claims 3 and 7 depend from independent claims 1 and 2, respectively, and further require that the first and second keys are time stamps. Brunner et al. fails to disclose or even suggest this feature. The Final Office Action states that "Claims 3... and 7...provide details of design choice such as a key being designated as a time stamp...(emphasis added)." The allegation of a "design choice" in the context of a rejection under 35 U.S.C. §102 is unclear. If anything, the reliance by the Final Office Action on a "design choice" rationale highlights the fact that Brunner et al. fails to disclose each and every element of claims 3 and 7 as required by 35 U.S.C. §102.

Independent claim 5 requires, inter alia, a database file server that includes means for accessing an index of the database and reading an index entry for requested data items, the index entry including a second key for the stored item of information. Once again, Appellant respectfully submits that Brunner et al. fails to disclose any type of index entry, let alone a key associated with the index entry. Brunner et al. further fails to disclose comparing the first key from the local cache with the second key from the index entry of the master database.

Claim 5 further requires means for returning an indication that the cached data item is consistent with the master database if the two compared keys are the same or returning a copy of the requested item of data from the master database if the two compared keys are different. There is no teaching of this feature in Brunner et al.

JAMES--Application No. 09/029,581

Claim 6 is directed to a database index. As discussed above, Brunner et al. has absolutely no teaching of a database index. If the rejection over Brunner et al. is maintained, Appellant respectfully requests that the next Office Action specifically itemize where all of the above features of claim 6 are disclosed by Brunner et al.

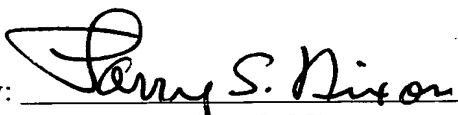
In view of the foregoing, it is respectfully submitted that claims 1-8 are patentable as not having been anticipated by Brunner et al.

CONCLUSION

For all of the reasons set forth above, it is respectfully requested that this appeal be granted and that the rejections discussed above be reversed.

Respectfully submitted,

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APPENDIX OF CLAIMS ON APPEAL

1. A method for checking the consistency of an item of data in a cache database with a respective item of data in a master database by comparing a first key stored in association with the item of data in the cache database with a second key stored in association with an index entry for the respective item of data in the master database.

2. A method for retrieving an item of data from one of a cache or a master database, the master database comprising a plurality of items of master data and an index containing entries corresponding to one or more of the items of master data, the cache database containing a cached copy of at least one item of the master data, the method comprising the steps of:

reading a first key stored in association with a cached copy of a required item of data from the cache database;

reading a second key stored in association with an index entry for a respective item of master data from the master database;

comparing the first key with the second key; and

retrieving in the event the first and second keys are the same the cached copy of the item of data or in the event the first and second keys are different the respective item of master data.

3. A method according to claim 1, wherein the first and second keys are time-stamps.

4. Use of a method according to claim 1 in a client/server system.

5. A database fileserver apparatus comprising:

input means for receiving a conditional read request for an item of data stored in the database, the request including a first key for a previously-retrieved copy of the item of data;

means for accessing an index of the database and reading an index entry for the requested item of data, the index entry including a second key for the stored item of information;

means for comparing the first and second keys; and

means if the keys are the same for returning an indication that the previously-retrieved copy of the item of data is consistent or if the keys are different for reading from the database and returning a copy of the item of data.

6. A database index, wherein at least one index entry in the index includes at least:

identity information for identifying an item of information in the database;

location information for indicating the location in the database of the item of information; and

JAMES--Application No. 09/029,581

version information which changes each time the respective information in the database changes.

7. A method according to claim 2, wherein the first and second keys are time stamps.

8. Use of method according to claim 2 in a client/server system.